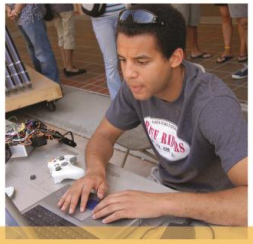
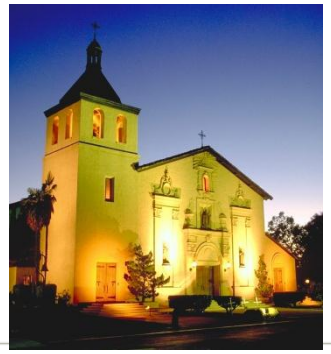
SANTA CLARA UNIVERSITY


Building Study Abroad Into the Curriculum
Santa Clara's Experience

Ruth Davis, Associate Dean

***Welcome* to a 102 YEAR TRADITION...**



It's not Easy!!!!

Allies are critical:

Current dean quotes St Francis – "you MUST travel to expand your mind"

Ex-dean (now Mech faculty) served as Director of International Studies

- **Associate Dean (and instructors of Intro Engineering course)**
- **Faculty (Advisors and Instructors)**

Engineering and Study Abroad






Challenge #1:

Our Calendar

Fall:

Sept 22 (first day of classes)

December 12 (last day of exams)

Winter:

Jan 5 –March 20

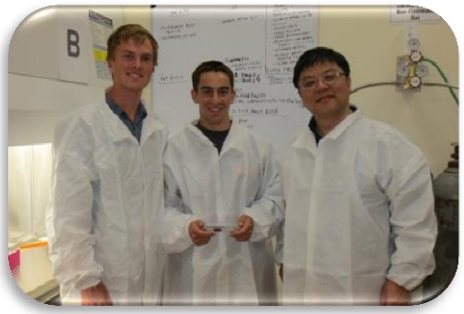
Spring:

March 30 – June 11

Typically, this means our students ONLY go in the fall

Departments and Degrees

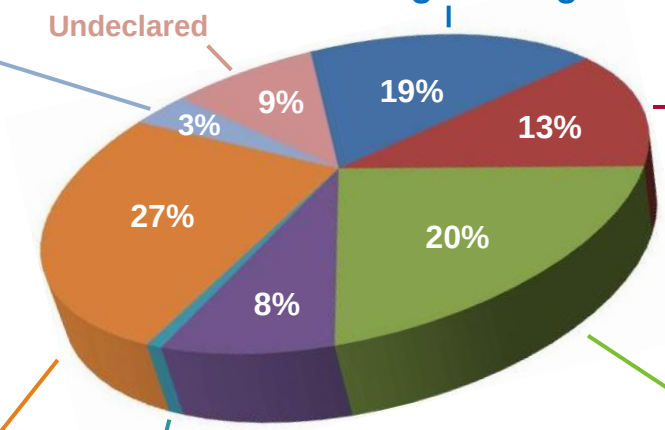
Web Design and Engineering



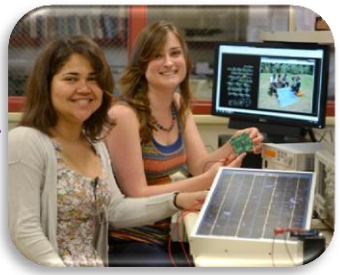
Bioengineering

Civil Engineering

Mechanical Engineering



General Engineering 1%



Electrical Engineering

Computer Science and Engineering

Challenge #2: making it possible in the curriculum (faculty buy-in)

We have had some (limited) success in this area.

- **Bioengineering** – no departmental plan
- **Civil Engineering** – FAQ/guidance for students planning to study abroad
- **Computer Science and Engineering** – 4 yr plan with study abroad
- **Electrical Engineering** – 4 yr plan with study abroad
- **Mechanical Engineering** – 4 yr plan attempts to make fall of junior year study abroad possible

Civil Engineering

To be able to graduate in four years, students should plan on taking at least three engineering courses when they study abroad *for the fall term of their junior year*. Recommended technical course options are provided in the table below. Only general course titles are provided in the table as some courses may be offered in different academic departments than where they are found at SCU and may carry slightly different titles. The higher priority courses are those that make up part of course sequences.

Higher Priority Classes	Mid-level Priority Classes	Lower Priority Classes
Civil/Construction Materials	Structural Steel Design	CENG Technical Elective
Intro to Geotechnical Engineering	Thermodynamics	Environmental Engineering
Intro to Transportation Engineering		Intro to Circuit Analysis

The need to take three engineering courses is related to the combined total number of required engineering courses that must be completed by SCU civil engineering students during the fall terms of their junior and senior years together with the normal number of available course slots. A list of CENG Technical Elective course options can be found in the departmental general advising handout. Students considering taking a technical elective should make sure that they have completed all prerequisite coursework before enrolling. In addition to three engineering courses, students can also take coursework that satisfies one or more University Core Curriculum requirements.

SANTA CLARA UNIVERSITY

	Fall	Winter	Spring
Freshman	University Core (Critical Thinking & Writing 1)	University Core (Critical Thinking & Writing 2)	COEN 19 – Discrete Math
	MATH 11 – Calculus I	MATH 12 – Calculus II	MATH 13 – Calculus III
	CHEM 11 – Chemistry I	PHYS 31 – Physics I	PHYS 32 – Physics II
	COEN 10 – Introduction to Programming[1]	COEN 11 – Advanced Programming	COEN 12 – Data Structures
	ENGR 1 – Introduction to Engineering (2 units)		

	Fall	Winter	Spring
Sophomore	University Core (Cultures & Ideas 1)	University Core (Cultures & Ideas 2)	University Core (Religion, Theology & Culture 1)
	MATH 14 – Calculus IV	AMTH 106 – Differential Equations	MATH 53 – Linear Algebra
	PHYS 33 – Physics III	AMTH 108 – Probability and Statistics	ELEN 50 – Electric Circuits
	COEN 21 – Logic Design	COEN 79 – Advanced Data Structures	COEN 20 – Embedded Systems

	Fall	Winter	Spring
Junior	Study Abroad (8 units minimum)	University Core	University Core
		COEN 171 – Programming Languages	ELEN 153 – Digital IO Design
		COEN 146 – Networks	COEN 179 – Algorithms
		Computer Engineering Elective	Computer Engineering Elective

	Fall	Winter	Spring
Senior	University Core	University Core	University Core
	COEN 177 – Operating Systems	Computer Engineering Elective	Free Elective
	COEN 174 – Software Engineering	COEN 175 – Compilers	COEN 122 – Computer Architecture
	COEN 194 – Senior Design I (2 units)	COEN 195 – Senior Design II (2 units)	COEN 196 – Senior Design III (2 units)
	ENGL 181 – Applied Engr Communications I (2 units)	ENGL 182A – Applied Engr Communications IIA (1 unit)	ENGL 182B – Applied Engr Communications IIB (1 unit)

Humanities & Social Science | Math & Science | Engineering | Other

Computer Science

&

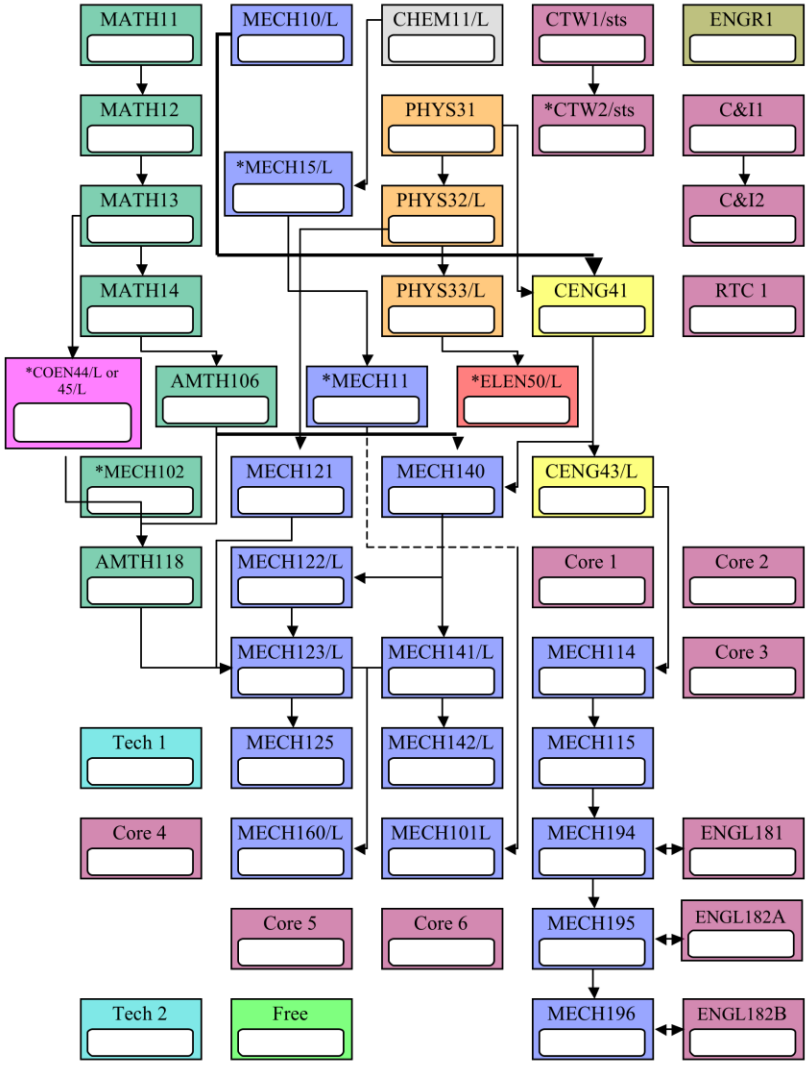
Engineering

Electrical Engineering

	Fall	Winter	Spring
Freshman	MATH 11 Calculus I	MATH 12 Calculus II	MATH 13 Calculus
	CHEM 11 Chemistry I	PHYS 31 Physics for Engineers I	PHYS 32 Physics for Engineers II
	Culture and Ideas I	Culture and Ideas II	ELEN 20 Energy and Nanotechnology
	Critical Thinking and Writing I	ELEN 21 – Intro to Logic Design	Critical Thinking and Writing II
	ENGR 1 Intro to Engr (2 units)		
Sophomore	**Fall**	**Winter**	**Spring**
	ELEN 50 Circuits I	ELEN 100 Circuits II	ELEN 110 Linear Systems
	COEN 44 Applied Programming	ELEN 33 Dig. Syst. Architecture	ELEN 115 Electronic Circuits
	MATH 14 Calculus IV	AMTH 106 Differential Equations	COEN 12 Data Structures
	PHYS 33 Physics for Engineers III	PHYS 34 Physics for Engineers IV	University Core
Junior	**Fall**	**Winter**	**Spring**
	Study Abroad Satisfies Professional Development (Note 3)	Math/Science Elective (Note 1)	AMTH 108 Probability and Statistics
		MECH 121 Thermodynamics	Technical Elective 2
		Technical Elective 1	Technical Elective 3
		University Core	University Core
			ELEN 192 Intro to Sr. Design (2 units)
Senior	**Fall**	**Winter**	**Spring**
	ELEN 194 Design Project I (2 units)	ELEN 195 Design Project II (2 units)	ELEN 196 Design Project III (2 units)
	ELEN 104 Electromagnetics	ELEN Advanced Core (Note 2)	Elective
	CENG 41 Mechanics I	Elective	Elective
	University Core	University Core	University Core
	ENGL 181 Eng. Comm. (2 units)	ENGL 182A Eng. Comm. (1 unit)	ENGL 182B Eng. Comm. (1 unit)

Humanities & Social Science | Math & Science | Major | Technical Elective | Study Abroad

Mechanical Engineering



Fall **1st Year**

Winter

Spring

Fall **Sophomore Year**

Winter

Spring

Fall **Junior Year**

Winter

Spring

Fall **Senior Year**

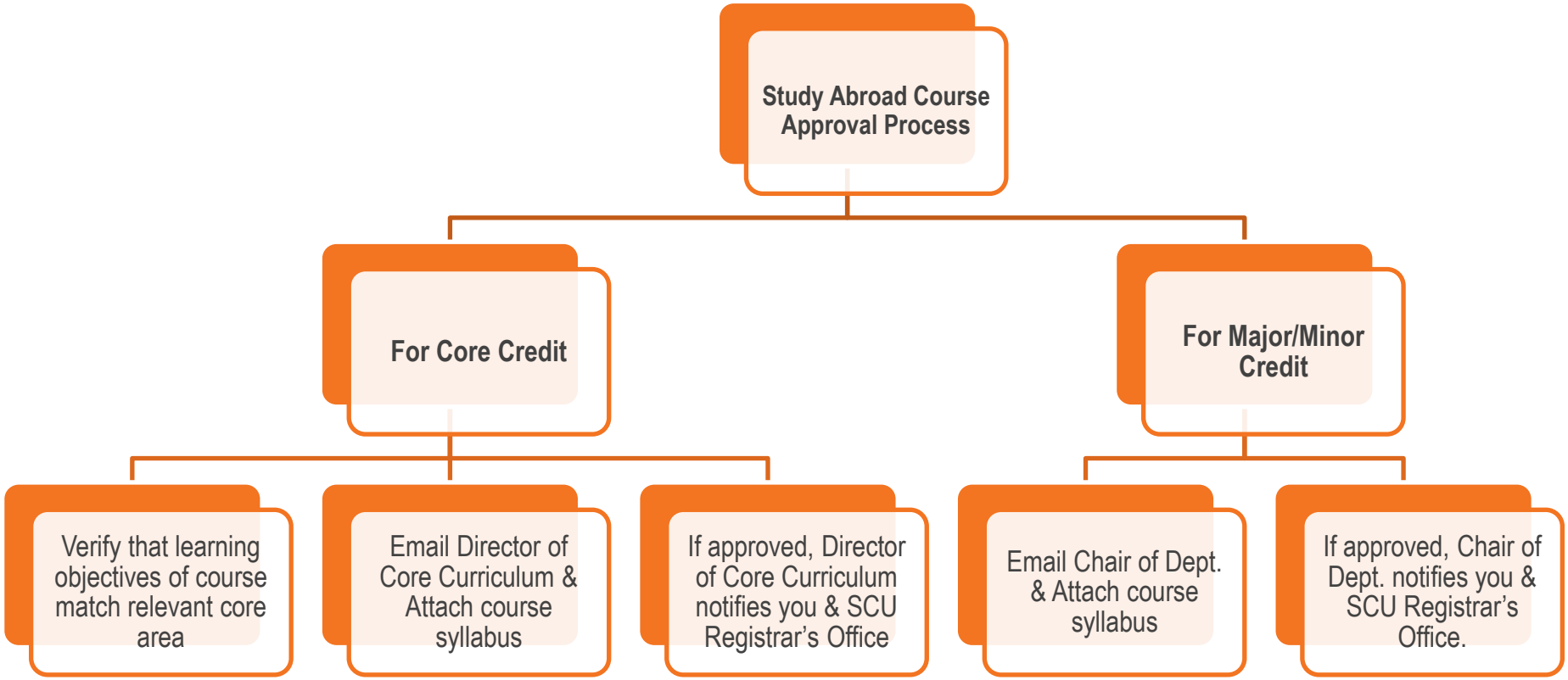
Winter

spring_____

Challenge #3:

What should/can they take?

Students often need to navigate multiple bureaucracies for approval of *possibilities*



Plea:

Make syllabi EASILY accessible

(It would be REALLY nice if someone wanted to take on identifying common core engineering courses to which we could each map our syllabi)